Trial Testimony Designations for:
In Re: W. R. Grace & Co., et al.
(U.S. Bankr. Ct., Dist. of Delaware, Case No. 01-1139)
March 24, 2008

Deposition Designation Key

Arrowood = Arrowood Indem. Co.
f/k/a Royal Indem. Co. (Light Green)

BNSF = BNSF Railway Co. (Pink)

Certain Plan Objectors "CPO" = Government Employees Insurance Co.; Republic Insurance Co. n/k/a Starr Indemnity and Liability Co.; OneBeacon America Insurance Co.; Seaton Insurance Co.; Fireman's Fund Insurance Co.; Allianz S.p.A. f/k/a Riunione Adriatica Di Sicurta; and Allianz SE f/k/a Allianz Aktiengesellschaft; Maryland Casualty Co.; Zurich Insurance Co.; and Zurich International (Bermuda) Ltd.; Continental Casualty Co. and Continental Insurance Co. and related subsidiaries and affiliates; Federal Insurance Co.; and AXA Belgium as successor to Royal Belge SA (Orange)

CNA = Continental Cas. Co & Continental Ins. Co. (Red)

FFIC = Fireman Funds Ins. Co. (Green)
FFIC SC = Fireman Funds Ins. Co. "Surety Claims" (Green)

GR = Government Employees Ins. Co.; Republic Ins. Co. n/k/a Starr Indemnity and Liability Co.

Libby = Libby Claimants (Black)

OBS = OneBeacon America Ins. Co. and Seaton Ins. Co. (Brown)

PP = Plan Proponents (Blue)

Montana = State of Montana (Magenta)

Travelers = Travelers Cas. and Surety Cos. (Purple)

UCC & BLG = Unsecured Creditors' Committee & Bank Lenders Group (Lavender)

AFNE = Assume Fact Not in Evidence
AO = Attorney Objection
BE = Best Evidence
Cum. = Cumulative
Ctr = Counter Designation
Ctr-Ctr = Counter-Counter
ET = Expert Testimony
F = Foundation
408 = Violation of FRE 408
H = Hearsay
IH - Incomplete Hypothetical
L = Leading
LA = Legal Argument
LC = Legal Conclusion
LPK - Lacks Personal Knowledge
LO = Seeking Legal Opinion
NT = Not Testimony
Obj: = Objection
R = Relevance
S = Speculative
UP = Unfairly Prejudicial under Rule 403
V = Vague

UNITED STATES BANKRUPTCY COURT
DISTRICT OF DELAWARE

IN RE:	.	Case No. 01-1139 (JKF)
	.	
W.R. GRACE & CO.,	.	
et al.,	.	USX Tower - 54th Floor
	.	600 Grant Street
	.	Pittsburgh, PA 15219
Debtors.	.	
	.	March 24, 2008
. . . . .	.	1:45 p.m.

TRANSCRIPT OF TRIAL
BEFORE HONORABLE JUDITH K. FITZGERALD
UNITED STATES BANKRUPTCY COURT JUDGE

APPEARANCES:

For the Debtors:	Kirkland & Ellis, LLP By: DAVID BERNICK, ESQ. BARBARA HARDING, ESQ. SCOTT McMILLAN, ESQ. 200 East Randolph Drive Chicago, IL 60601
For the Asbestos Creditors Committee:	Caplin & Drysdale, Chartered By: NATHAN FINCH, ESQ. WALTER SLOCOMBE, ESQ. BERNARD BAILOR, ESQ. JAMES WEHNER, ESQ. ADAM L. VAN GRACK, ESQ. One Thomas Circle, NW Washington, D.C. 20005 Caplin & Drysdale, Chartered By: ELIHU INSELBUCH, ESQ. 375 Park Avenue, #3505 New York, NY 10152
Audio Operator:	Janet Heller

Proceedings recorded by electronic sound recording, transcript produced by transcription service.

J&J COURT TRANSCRIBERS, INC.
268 Evergreen Avenue
Hamilton, New Jersey 08619
E-mail: jjcourt@optonline.net

(609)586-2311 Fax No. (609) 587-3599

Libby

PP Obj: R; F; H; UP; ET

this afternoon.

MR. McMILLAN: Your Honor, we would like to call Peter Lees to the stand.

THE CLERK: Please raise your right hand.

PETER LEES, DEBTORS' WITNESS, SWORN

THE CLERK: Make sure you speak into the microphone.

VOIR DIRE

BY MR. McMILLAN:

Q Dr. Lees, can you please state your name for the record?

A Yes, my name is Peter Lees. That's spelled L-e-e-s.

Q Dr. Lees, what is your occupation?

A I am a Professor of Environmental Health Science at the Johns Hopkins University, Bloomburg School of Public Health, in Baltimore, Maryland.

Q In broad terms what have you been asked to testify about today?

A I've been asked to summarize my study of retrospective exposure assessment of persons who worked with Grace products and what their potential exposures were.

Q Have you prepared any graphics in anticipation of testifying today?

A Yes, I have.

Q Would it assist you in your presentation today to use those graphics?

A Yes.

MR. McMILLAN: Could I see GG-2193, please?

Q Dr. Lees, could you please tell us about your educational background?

UNIDENTIFIED ATTORNEY: Scott, are we going to get a copy of the graphics?

MR. McMILLAN: They should be in the binder.

UNIDENTIFIED ATTORNEY: In the binder? Okay.

A Okay. I'm sorry. Could you repeat the question?

Q Sure. Could you please tell us about your educational background?

A Okay. Sure. I have a bachelors of science in biology from the College of William and Mary in 1972, and then in 1986 I received a PhD, a doctorate, in environmental health sciences, in particular industrial hygiene, from the Johns Hopkins University.

Q After you --

UNIDENTIFIED ATTORNEY: Excuse me, Scott. Excuse me, Your Honor. Could you ask the witness to raise his voice? We're having a hard time hearing.

THE WITNESS: I'm sorry.

MR. McMILLAN: Can you --

THE CLERK: I can't turn it up.

THE WITNESS: I'll -- I'll move a --

MR. McMILLAN: Can you pull it towards you a little more?

Libby

THE WITNESS: It's one of these battles that I have to be close to the microphone, but I can't read the screen.

(Laughter)

MR. BERNICK: They would prefer that you not be able to --

(Laughter)

THE WITNESS: Okay. I'll try to speak up.

BY MR. McMILLAN:

Q Dr. Lees, after you've received your undergraduate degree, where did you go to work?

A Okay. Upon graduation from William and Mary I went to work for an environmental consulting firm in Boston, Massachusetts.

Q And what did you do there?

A I was their first hire in a new division or department that investigated or worked with industrial hygiene problems and air pollution problems. Remember, this is 1972 right after OSHA and EPA came into existence.

Q And how long did you work there?

A For a little bit more than five years.

Q At that point did you decide to go back to graduate school?

A Yes.

Q Why did you make that decision?

A Well, with a bachelors degree in biology I essentially

PP Obj. R; F; H; UP; ET

Libby

learned industrial hygiene on the job at this consulting company, and I reached a point in my career where I was being called upon to make decisions that I really didn't think that I had the basis -- the scientific basis to make a good decision. So at that point I decided to go back to school to essentially figure out what I was doing.

Q And when you went back to school to receive your PhD, what was your PhD in?

A Well, actually, I originally went back to school to get a masters degree but rapidly transitioned into the doctoral program, and I received that degree, and that was in environmental health sciences with a specialization in industrial hygiene.

Q What was your PhD thesis about?

A It had to do with an elucidation of the factors that determined exposure to PCBs in a group of workers who were repairing transformers.

Q And for how long of a period have you been a practicing industrial hygienist?

A I've been practicing since 1972 really at -- obviously at different degrees of expertise.

Q Let's talk about a couple of the positions that you've held. First of all, could you tell us what position you held for the State of Maryland?

A Okay. I was the Executive Assistant Commissioner of the

PP Obj: R; F; H; UP; ET

Libby

Maryland Occupational Safety and Health Program, which is the state OSHA program.

Q What did you do in that role?

A As Executive Assistant Commissioner, I was primarily responsible for upgrading the technical and scientific abilities of the industrial hygiene inspector's staff to assure the high quality inspections.

Q Okay. What is your current position at Johns Hopkins?

A I -- as I stated, I'm Professor of Environmental Health Sciences at the School of Public Health.

Q Have you been on the faculty since you got your PhD at Hopkins?

A Since January 1, 1986, yes.

Q Do you have current teaching responsibilities at Hopkins?

A I do.

MR. McMILLAN: Could we see GG-2194?

A Okay.

Q In which school do you teach?

A It's in the School of Public Health.

Q And in terms of schools of public health in the United States, is Hopkins one of the more respected schools?

A You're probably asking a biased person, but yes, it's the largest, the oldest. It's been ranked number one by U.S. News and World Report since they started ranking schools of public health.

PP Obj: R; F; H; UP; ET

Libby

Q What are the courses that you teach at Hopkins?
A Well, actually, coincidentally, today is the first day of the fourth term, and this morning I was supposed to teach occupational health, but --
Q You had other invitations.
A -- I'm sure my students send their thanks. But I teach occupational health. I teach a course entitled Principles of Industrial Hygiene, another one, Industrial Hygiene Laboratory. These are all under the Department of Environmental Health Sciences. And in addition I teach in -- two courses in the Department of Epidemiology, one course entitled Occupational Epidemiology and the other one Environmental Epidemiology.
Q Now in the course of teaching your students, do you teach them how to conduct exposure assessments?
A You know, I think it's fair to say that as a part of every one of those courses that I just named there is -- in one aspect or another there is an aspect of exposure assessment, yes.
Q What about how to use industrial hygiene data for epidemiologic studies? Is that something that you are teaching students?
THE COURT: Wait. I'm sorry. Can you hold on just one second, please?
(Pause)
THE COURT: I apologize. Could you repeat that for

PP Obj: R; F; H; UP; ET

Libby

me, please, your last question?

MR. McMILLAN: The one that he answered, or the one I was just starting?

THE COURT: The one you were just starting?

BY MR. McMILLAN:

Q Do you teach your students how to use industrial hygiene data in the course of conducting epidemiologic studies?

A Yes, that's my primary role in these two courses in the Department of Epidemiology.

Q Besides teaching students, what other responsibilities do you have at Hopkins?

A Well, I advise students, both doctoral and -- masters and doctoral students. I perform research and, of course, any academic institution, I serve on numerous committees.

Q Now, the courses that you listed here a minute ago, are you teaching undergraduate or graduate students in those courses?

A These are all graduate level courses. I teach masters students, doctoral students, and, in addition, physicians who are in their occupational medicine residency programs.

MR. McMILLAN: Could we see GG-2195?

Q Dr. Lees, are you a certified industrial hygienist?

A Yes, I am.

Q What does that mean?

A Well, the certification -- CIH, certified industrial

PP obj: R; F; H; UP; ET

Libby

hygienist, is a designation conferred by a professional accrediting body, and it basically means that I have fulfilled certain educational requirements, experience requirements, and have passed a written test.

Q What is the board or body that certifies industrial hygienists?

A It's the American Board of Industrial Hygiene oversees this entire process.

Q Have you been a member of the American Board of Industrial Hygiene?

A Actually, just two weeks ago I came off a five-year term on the Board.

Q How many members are there of the Board?

A Just 12.

Q How did you come to become a member of the Board?

A I was nominated by another organization, the American Conference of Governmental Industrial Hygienists, and then through an election process I became a member of the Board.

Q Are there other professional organizations of which you are a member?

A Sure. There are numerous ones, and they're listed in this graphic. I can read them if you wish.

Q Well, why don't you tell me are there any of those organizations on which you have served on committees or in a leadership role?

PP Obj: R; F; H; UP; ET

Libby

A Okay. Well, the American Board of Industrial Hygiene, obviously, you know, on the Board is a leadership role. The American Industrial Hygiene Association, for many years I've been a member of the Occupational Epidemiology Committee, and in addition, I've recently been named the -- let's see if I can get this right. It's so new -- the Chair of the Scientific Committee on Industrial Hygiene of the International Commission on Occupational Health. And then in these -- most of these other organizations I have served as a peer reviewer for their respective journals.

Q Does a portion of your professional work for these organizations relate to exposure assessments?

A I think it would be fair to say for -- with the exception of the American Board of Industrial Hygiene, which is really an administrative sort of position, in one way or another exposure assessment is a part of all of these activities, yes.

Q Does a portion of your professional work for these organizations relate to the appropriate use of industrial hygiene data in epidemiologic studies?

A Well, certainly, the Occupational Epidemiology Committee of the American Industrial Hygiene Association, yes. In addition, the ICOH, the International Commission on Occupational Health, we work -- my committee works very closely with another committee that is -- focuses on occupational epidemiology.

pp Obj: R; F; H; UP; ET

Libby

MR. McMILLAN: Could we see GG-2196?

Q In your work as an industrial hygienist have you also engaged in research?

A Certainly, that's a major activity at Johns Hopkins.

Q Has your research related in part to exposure assessments?

A It's probably fair to say that 95 plus percent of all my professional activities relate in one way or another to exposure assessment.

Q Have you written articles that have been published in the peer reviewed literature relating to exposure assessments?

A Sure, yes.

Q Approximately how many exposure assessments have you published?

A In the peer-reviewed literature and other reports it's probably in excess of 100 at this point.

Q For what substances have you published exposure assessments?

A Well, it's many, many substances, asbestos, manmade mineral fibers, certain metals, in particular lead, solvents, styrene, PCBs, which -- chromium. Those are the ones that come to mind.

Q Have you ever been asked to perform an exposure assessment for the U.S. government?

A Yes, I have.

Q What did you do?

PP obj: R; F; H; UP; ET

Libby

Q I was asked by the U.S. Environmental Protection Agency as a part of their ruminations, if you will, on revising their chromium standards to conduct a retrospective exposure assessment of a group of workers who were exposed to hexavalent chromium, and this exposure assessment fed into a -- or it was a part of a larger epidemiologic study to assess risk. That study was ultimately used as one of the studies used by OSHA in their revised exposure standard for chromium which was issued 2004ish.

Q Have you recently been asked to look at that again or to update the work you did previously?

A That study was completed. It was published in I believe 2000, and I currently have a contract with EPA to update that study.

Q Within the field of industrial hygiene, do you have an area in which you would say that you have specialized?

A Oh, yes, I specialize in exposure assessment and in particular retrospective exposure assessment as a part of epidemiologic studies.

MR. McMILLAN: Could we see GG-2197, please?

Q Have you done any exposure assessments or exposure work that is specifically related to asbestos?

A Yes.

Q Could you tell us about that?

A Okay. Well, actually, it starts from my -- some of my

PP Obj: R; F; H; UP; ET

Libby

earliest days at the consulting company in Boston in which I did surveys in various workplaces that manufactured products that had an asbestos component. One I can think of most prominently was a vinyl asbestos tile manufacturing facility. So I did a number of those in the early and mid-1970s.

When I went to Hopkins, I became involved in exposure assessment related to asbestos in building materials, and let's see. What else? I've done some work for several utilities related to the removal of asbestos-containing pipe wrap from gas pipes. Actually, as a part of these proceedings here, I conducted an exposure assessment of -- for people working with vermiculite attic insulation. That was completed in 2002/2003 and submitted to this Court.

Q Had you had any teaching responsibilities relating to asbestos?

A Well, you know, as a part of Principles of Industrial Hygiene course, as a part of the Industrial Hygiene Laboratory course, you know, asbestos is a part of that teaching. In addition, I have -- I taught for probably eight or ten years at the OSHA Training Institute in Chicago. This is the training institute -- the school that OSHA runs to teach new inspectors how to do their job. I work with the laborers union on asbestos training, a number of things. Yes.

Q Have you worked on any asbestos abatement projects?

A I have. Again, this was part of my -- during my doctorate

PP Obj: R; F; H; UP; ET

Libby

work I actually also worked for Johns Hopkins University in a research capacity, and we had a contract with the U.S. General Services Administration for the national capital region, so this is the government's landlord for basically inside the beltway in Washington, D.C. And the -- and this is in the early 1980s when EPA came out with their new regulations for asbestos removal, and we helped, assisted, guided them in getting up to speed, if you will, with those regulations, and as a part of that, you know, I had worked hands on designing and overseeing several -- a couple asbestos removals from government buildings.

Q In the course of your work with asbestos exposure assessments or abatement work have you personally been involved in sampling for asbestos?

A I have collected who knows how many thousand samples as a part of this effort, yes.

MR. McMILLAN: Your Honor, I would move to qualify Dr. Lees as an expert in the field of industrial hygiene.

MR. RASMUSSEN: No objection, Your Honor.

UNIDENTIFIED ATTORNEY: No objection.

THE COURT: All right. He's qualified to express an expert opinion in the field of industrial hygiene.

MR. McMILLAN: Could we see GG-2198, please?

DIRECT EXAMINATION

BY MR. McMILLAN:

PP Obj: R; F; H; up; ET

Libby

Q Dr. Lees, could you tell us what is industrial hygiene?
A Okay. Industrial hygiene is the science that seeks to understand and quantify exposures of workers to toxic or potentially toxic substances, and then depending upon what the findings are of that evaluation, if appropriate, to recommend design or implement some kind of a control to reduce exposure. And the overall purpose of the field or of the science is to reduce or eliminate occupational disease through control of occupational exposures.
Q Is the identification and evaluation of the exposures one of the core functions of the industrial hygienist?
A Yes, I would -- in my evaluation that is the heart of industrial hygiene.

MR. McMILLAN: Could we see GG-2199?

Q Dr. Lees, can you tell us when the field of industrial hygiene first came into being?
A Well, it certainly -- it has its roots in ancient Greece where people who -- minors who worked in dusty environments, in particular, people who worked in lead mines, became ill, and some bright guy made the association between exposure to the dust and their illness, and at that time they devised -- you know, it was not much more than a rag over your face, but it was a crude respirator to reduce exposure. But, you know, the real science having to do with exposure and occupational disease developed in 18th century Europe where there was, you

PP Obj: R; F; H; UP; ET

Libby

know, a more rigorous scientific approach to this field, and as a part of that was clearly establishing the relationships between exposure and occupational diseases.

Q When did the U.S. government begin to utilize or study industrial hygiene principles?

A Okay. Well, the whole field of occupational health, and, in particular, industrial hygiene, was a little slow getting off the ground in this country, and it was in the early part of the 20th century -- excuse me. In the early part of the 20th century the U.S. Bureau of Mines was founded, and one of the reasons it was founded was to reduce or eliminate safety and health problems associated with mining. And also a couple years later, in 1914, the U.S. Public Health Service founded or began their Office of Industrial Hygiene to examine occupational diseases resulting from exposures in industry.

Q When did the U.S. government begin to start regulating mines and industry using industrial hygiene principles?

A Okay. These two organizations that I just talked about were really research and advisory. They had a research and advisory role. The regulatory part of the occupational industrial hygiene field began for the mine -- for mines in 1968 with the formation of the Mine Safety and Health Administration, and then in 1970 when OSHA, the Occupational Safety and Health Administration, was formed.

Q And do MSHA and OSHA employ industrial hygiene principles

PP Obj: R; F; H; UP; ET

Libby

in setting regulations for the workplace?

A Oh, yes, absolutely.

Q Now, I think you mentioned earlier that evaluating the workers' exposure is an important part of being an industrial hygienist. Right?

A Yes, it's an essential tool. It's a core tool of the profession.

MR. McMILLAN: Could we see GG-2200?

Q Could you briefly tell us how an industrial hygienist measures a worker's exposure or how you would go about doing that?

A Okay. Well, this is actually the subject of several lectures I give in the Principles of Industrial Hygiene course, but I'll give you the much abbreviated version. The process begins with a definition of the question that you're asking and then devising an appropriate what we call sampling strategy to answer that question. And by sampling strategy, I mean who are we going to sample, when are we going to sample, what in terms of substances are we going to sample, when. I think I might have already said that. So the who, what, when, where kinds of questions define the strategy.

The next step is the actual collection of a physical air sample using an air pump that draws air through a collection device that separates the contaminant from the air. The -- in the case of asbestos fiber, that collection --

PP Obj: R; F; H; UP; ET

Libby

asbestos exposure, that device is a -- essentially a filter paper which is then taken to the laboratory and analyzed under a microscope. The results of the analysis are then used to calculate a concentration -- an air concentration of asbestos fibers, and that number or those numbers or that data are evaluated, and based on that data, some decision is made. We have a problem, we don't have a problem, and then maybe recommendations, we need to institute controls, would be instituted.

MR. McMILLAN: That's what we want to talk about Dr. Lees. If we could look at GG-2201.

Q What are the various reasons why you would be devising your sampling plan or why you would be going out and obtaining or constructing the industrial hygiene data?

A Well, as I maybe intimated, there are many, many different reasons that one would collect an air sample to estimate the concentration of a contaminant in the air. Probably the primary one in this country at this time is to determine compliance with OSHA standards which specify that you can't be exposed -- workers can't be exposed above a certain concentration. But in addition, air sampling would be used, for instance, to specify the appropriate type of personal protective equipment. That is that different types of respirators are required according to the concentration of the contaminate. Air sampling could be used to specify what sort

PP Obj: R; F; H; UP; ET

Libby

of a ventilation system would be required. In addition, industrial hygiene data are used as a part of exposure construction or reconstruction for epidemiologic studies or for risk assessment studies.

Q Now, Dr. Lees, the purpose for which you are going to be using the industrial hygiene data, does that affect how you design your sampling strategy and how you report the industrial hygiene data?

A It affects both, yes.

MR. McMILLAN: Could we see GG-2202, please?

Q Could you explain to us how the purpose of an industrial hygiene study affects how you report the data for that study?

A Well, that's probably easily -- I'll try that one again -- most easily described through a couple of examples. For instance, if the question is are these workers in compliance with a OSHA standard -- I designed my strategy to measure the exposure of what I think is the most highly exposed worker or workers, and then my determination of compliance or not is based on the highest, the maximum value. Okay? Whereas, on the other hand, for an epidemiologic study it's not the maximum value, but it's the average value of -- for the exposure is the appropriate input to a epidemiologic study. So the different reasons have different ways of reporting the data.

Q You said a moment ago that for an epidemiologic study what you report is the average exposure. Can you explain why for an

pp obj: R; F; H; vf; ET

Libby

epidemiologic study you would be reporting the average?
A And when I say epidemiologic study, I mean epidemiologic studies of chronic diseases. Okay? And the reason that we use the average is, because the input to an epidemiologic study of chronic diseases is the cumulative exposure, which is the average concentration -- air concentration times the frequency that the person was exposed to that concentration times the duration, how many days or years or months or years the person was exposed.
Q And is it appropriate when you're looking at exposures over the long term to use the average?
A Yes. Yes. Worker exposures vary. One day they're high. One day they're low. But over time the highs and the lows balance each other out, and so they will center about in the long term some average exposure, and it's that value that is -- goes forward into the calculation of cumulative exposure.
Q Now, when you report your exposures for an epidemiologic study, do you typically report things like the confidence interval or the standard deviation along with the average that you're reporting?
A No, that wouldn't be necessary as only the average concentration is what would go forward into this calculation of cumulative exposure.
MR. McMILLAN: Dr. Lees, I want to talk a little bit about -- you mentioned a minute ago variability in exposures,

PP obj: R; F; H; UP; ET

Libby

PP Obj: R; F; H; UP; ET

and I want to focus on that for a minute. Can I see GG-2203, please?

Q Dr. Lees, this is an excerpt from an article by Dr. Irving Selikoff, and I just want to ask you to comment on what he's saying here. Dr. Selikoff says that, "The different occupations vary widely in important respects in intimacy, intensity, and duration of exposure, in variety and grade of asbestos used, in working conditions, in concomitant exposure to other dusts or inhalants." Can you explain what Selikoff is describing here?

A Yes, well, what he's saying is that essentially all asbestos exposures -- there is no such thing as asbestos exposure period. And, in fact, they're depending on industry, on job, on products used. There is -- you can't paint exposure with one broad brush. All of these different considerations go into ending up with different exposures for different people, if you will.

Q So as an industrial hygienist, when you are asked to characterize exposures or to categorize exposures, what does that mean you have to do?

A Well, you have to specify as narrowly or as closely as possible all of the considerations -- the variables, if you will, that affect exposure.

MR. McMILLAN: Can we look at GG-2204?

Q Can you tell us -- you said you have to look at all the

Libby

factors. Can you tell us what the key factors that you consider when you are doing an individual asbestos exposure assessment?

A Okay. Well, starting -- you know, starting from the 100,000 foot level, very broadly, there were thousands of uses of asbestos in the last century, and -- but it -- so in order to narrow this down from all asbestos exposures, the next step would be to look at what industry -- determine what industry we're talking about, because different industries describe different sorts of exposures. Then within an industry further narrow down to a job title, because within an industry different people do different things, and they have different exposures, and then narrowing down further beyond that. And this is particularly true of the construction industry. Even people with the same job title may work with different materials that have different asbestos exposures associated with them, so we narrow down.

MR. McMILLAN: Okay. Well, I think the first one you mentioned is industry. I want to talk about that one first. If you could show GG-2205?

Q Dr. Lees, can you explain to us what this graph shows?

A Yes, these are data. The warm-colored bars to the right of the slide are taken from EPA's 1986 asbestos risk assessment, and what they do is they present average exposures for four different industries there. So you can see that in

PP Obj: R; F; H; UP; ET

Libby

the -- for cement factory workers the average exposure was five fibers per cubic centimeter, whereas, for amosite factory workers it was a factor of four higher, and the average exposure was 35 fibers per cubic centimeter.

Q Now, are these industry wide average exposures?

A Yes.

Q I see on the left a blue and a green column that refer to Nicholson's Construction Traits. Where do the Nicholson numbers come from?

A These numbers come from Nichols -- William Nicholson's 1982 paper in which he estimated or predicted or calculated future disease from asbestos exposure, and these are the exposures -- the construction industry exposures that he presents in that paper.

Q Now, for the majority of the W.R. Grace products that contained added chrysotile asbestos, what industry category would they fit into?

A They were within the construction industry category.

Q And with the information that you've presented here, which is an industry wide average, is that enough information to predict any individual worker's exposure?

A Again, no.

Q Why not?

A Well, within a broad industry category, as I said, there are many, many different jobs, many with different tasks that

PP obj: R; F; H; VP; ET

Libby

have different exposures associated with them.

MR. McMILLAN: Well, let's talk about the jobs next. Can we see GG-2206, please?

Q Now, you see this is an excerpt of a study by Corbett McDonald in 1983. Do you recognize this, Dr. Lees?

A Yes.

Q Could you tell us what he was studying in this study?

A This was -- was health risks associated with exposure to asbestos in the textile industries was the subject of the study.

Q And did McDonald break down his exposure analysis by the jobs that existed within this textile factory?

A Yes. Yes, rather than assign one exposure level for the entire industry, he broke it down. Actually, it was by -- as you see on the left-hand side of the table is by departments, and departments are groups of similar jobs -- and assigned different exposures to these different groups of jobs.

Q And when you look at the individual jobs within this textile industry study, do you see difference?

A Well, there are differences that are, you know -- well, just looking at this, there's a factor of maybe 10 or 20 from the highest to the lowest exposed job.

Q Now, for each department or job that Dr. McDonald is presenting, how does he present the exposure data?

A Well, the -- it says it in the title there. It says,

PP Obj: R; F; H; UP; ET